Developmental Test and Evaluation Defense Science Board Task Force Study

Pete Adolph

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Task Force Members and Government Advisors

Mr. Charles (Pete) Adolph, Chairman

Dr. Ernest Seglie, Executive Secretary

Mr. Chris DiPetto, Executive Secretary

Dr. Larry Crow, Member

RADM (Ret) Bert Johnston, Member

Mr. Richard Johnston, Member

VADM (Ret) John Lockard, Member

Mr. Raymond Lytle, Member

MG (Ret) Wilbert (Doug) Pearson, Member

Mr. Matt Reynolds, Member

Dr. George Schneiter, Member

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Mr. Michael Toole, Member

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Dr. John Claxton, Government Advisor

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COL Richard Stuckey, Government Advisor

Dr. James Streilein, Government Advisor

Problem Definition

- Approximately 50% of programs completing Initial Operational Test and Evaluation (IOT&E) have not been evaluated as operationally effective and operationally suitable. These failures in IOT&E suggest deficiencies in our DT&E processes.
  - Substantial increase in the number of systems not suitable during IOT&E
  - Suitability failures are as high as 80% for some commodities
  - Reliability, Availability and Maintainability (RAM) deficiencies comprise the primary shortfall areas

Tasking

Terms of Reference Objectives:

- Assess OSD organization, roles, and responsibilities for T&E oversight
- Recommend changes to improve DT&E oversight and facilitate integrated T&E
- Recommend changes to Title 10 or other U.S. statutes that may improve OSD authority in DT&E oversight
- Recommend DT&E process improvements to discover suitability problems earlier

Additional Task Force Objectives:

- Conduct root cause analysis of suitability problems
- Recommend changes to correct systemic problems

Background

Major Changes in the Last 15 Years

- Acquisition Reform
  - Elimination of military specifications and standards
  - Reliability growth during system development was deemphasized or eliminated
  - Emphasis on commercial practices and products, including Commercial Off-The-Shelf (COTS) equipment and components
  - Performance-based contracting
  - Reduced government oversight
  - Emphasis on survivability and lethality testing below end item
- Emphasis on evolutionary acquisition and spiral development
- Increased weapon systems complexity
- Reduced government resources and workforce
- Integrated developmental and operational test emphasis
- Emphasis on joint programs
- BRAC realignment
- Loss of strong Service advocates for RAM (Willoughby, Lorber, Goodell)
- More emphasis on systems engineering
- Initiated Systems of Systems (SoS) acquisition approach

Service Change Summary

ARMY
- Testing functions consolidated into Army Test & Evaluation Command (ATEC) (1999)
- Army designated dedicated government DT as discretionary (late 1990s)
- Major shift in DT military, civilian, and contractor workforce mix (1991 to 2007)
  - Military strength reduced from 1836 to 61 soldiers
  - Civilian manpower reduced from 5610 to 3076
  - Contractor full-time equivalent increased from 3072 to 4599

NAVY
- Personnel levels in Navy DT reduced 10% across the board
  - No shift from government “hands-on” DT to oversight has occurred
- Integrated prime contractor/government DT/ OT (integrated test teams)

AIR FORCE
- Current trend is to give DT&E conduct and control to prime contractor
  - Ability to conduct government DT&E and independent analysis significantly diminished
  - Increasing perception that AF test activities are migrating to "rent a range" support for system manufacturers
- Test personnel levels have decreased approximately 15% since 1992
- Aeronautical systems engineering workforce declined 59% in the last 15 years

Principal Findings and Recommendations

Reliability Availability and Maintainability (RAM) Findings

- Acquisition Reform implementation had a detrimental impact on RAM practices
  - With some exceptions, the practice of reliability growth methodologies was discontinued during System Design and Development (SDD) and deferred until production
  - Relevant military specifications and standards were cancelled and not, in all cases, replaced with industry standards
  - The technical/managerial workforce was reduced in most government program offices and test organizations
- RAM shortfalls are frequently identified during DT, but program constraints (schedule and funding) often preclude incorporating fixes and delaying IOT&E
- In some instances, programs had such serious RAM concerns that they were precluded from proceeding to production until the problems could be corrected. Improved RAM decreases life cycle costs and reduces demand on the logistics system

Impact of Low Reliability on Life Cycle Cost (LCC)

- Recent Logistics Management Institute (LMI) and Army studies investigated relationship between reliability and Life Cycle Cost (LCC). Both studies concluded that reliability investment during design and development reduces support cost
  - LMI study concludes that:
    - 30-60% reduction in support cost is achievable
    - Reacting to lower reliability after IOC (vice during development) results in significant support cost increases
- OSD CAIG study shows that support costs are two-thirds or more of total system cost
  - DoD should address acquisition and LCC strategies concurrently
    - Support cost bill payers should participate in requirements definition and trade studies during development

Upfront Investment in Robust RAM Effort Emphasizing Reliability Growth Reduces Life Cycle Costs

RAM Recommendations

The single most important step necessary to correct high suitability failure rates is to ensure programs are formulated to execute a viable systems engineering strategy from the beginning, including a robust RAM program, as an integral part of design and development. No amount of testing will compensate for deficiencies in RAM program formulation. To this end, the following RAM-related actions are required as a minimum:

- Identify and define RAM requirements during the Joint Capabilities Integration Development System (JCIDS) process and incorporate them into the Request for Proposal (RFP) and as a mandatory contractual requirement
- During source selection, evaluate the bidders' approaches to satisfying RAM requirements
  - Ensure flow-down of RAM requirements to subcontractors
- Make RAM, to include a robust reliability growth program, a mandatory contractual requirement and document progress as a part of every major program review
- Develop a military standard for consistent RAM development and testing that can be readily referenced in future DoD contracts
- Ensure an adequate cadre of experienced RAM personnel are part of the Service acquisition and engineering office staffs

Roles and Responsibilities of Government T&E Organizations Findings

The aggregate lack of process guidance due to the elimination of specifications and standards, massive workforce reductions in acquisition and test personnel, and the high retirement rate of the most experienced technical and managerial personnel in government and industry has a major negative impact on DoD's ability to successfully execute increasingly complex acquisition programs.

- Major personnel reductions have strained the pool of experienced government test personnel
- A significant amount of developmental testing is currently performed without the needed degree of government involvement or oversight and in some cases, with limited government access to contractor data
- The current trend away from governmental involvement in DT makes operationally oriented testing in some areas during development even more difficult to accomplish

Roles and Responsibilities of Government T&E Organizations Recommendations

As a minimum, government test organizations should retain

a cadre of T&E personnel to perform the following functions:

- Participate in the translation of operational requirements into contract specifications, and in the source selection process, including RFP preparation
- Participate in developmental test and evaluation planning including TEMP preparation and approval
- Participate in the technical review process including SRR, PDR,CDR, TRR and FRR
- Participate in test conduct, data analysis, and evaluation and reporting, with emphasis on analysis and reporting
- Capture and re-apply best practices and lessons learned

Integrated Test and Evaluation Findings

- Service acquisition programs are incorporating integrated testing to a limited degree through varying approaches
  - Army has integrated DT and OT organizations into one command
  - Navy utilizes a full-spectrum RDT&E approach to conducting Test & Evaluation
  - Air Force employs Combined Test Force concept which consolidates test execution
- Additional emphasis on integrated testing can result in greater T&E process efficiency and program cost reductions

Integrated Test and Evaluation Recommendations

- Implement OSD policy change mandating integrated DT&E and OT&E planning and execution throughout the program
  - Require sharing and access to all appropriate system-level and selected component-level test and model data by government DT and OT organizations as well as the prime contractor, where appropriate
  - Incorporate data access requirements in contract
  - Integrate test events, where practical, to satisfy OT and DT requirements
  - Define which testing will be accomplished by the prime contractor, government DT lead, and OT as the lead agency prior to award of contract
  - Require an operational evaluation framework as a part of the Milestone B TEMP
- Make available a cadre of operational personnel to support DT for Acquisition Category (ACAT I) and special interest programs, as a minimum
- Better integrate Operational Test Agencies (OTAs) into the DR process to include participation on Joint Reliability Maintainability Evaluation Team (JRMET) or Corrective Action Review Board throughout DT

Operational Test Readiness Review (OTRR) Findings

- DoDI 5000.2 requires that “the Service Acquisition Executive (SAE) shall evaluate and determine materiel system readiness for IOT&E"
  - For all Services, the OTRR process is an in-depth review of readiness
  - Decision authority is frequently delegated to the Program Executive Officer (PEO)
- Shortcomings in system performance, suitability, and RAM are usually identified during the OTRR
- In most cases, the operational test readiness certifying authority is aware of the risk of not meeting OT criteria when major shortcomings exist
- Because of the funding constraints, the low priority given to sustainment, as well as the urgency in recent years to get new capabilities to the Warfighter, major suitability shortcomings have rarely delayed the commencement of dedicated IOT&E

OTRR Recommendations

- Conduct periodic operational assessments to evaluate progress potential for achieving pre-determined entrance criteria for operational test events
- Conduct an independent AOTR prior to the OTRR (included in latest draft DODI 5000.2) for oversight programs
  - Results of the AOTR should be briefed at the OTRR
- Include a detailed RAM template in preparation for the OTRR
- CAE submit a report to OSD that provides the rationale for the readiness decision
  - Include an evaluation of weapon system's capabilities against Critical Operational Issues (COIs)
  - Certify that the DT evaluation is complete and indicates acceptable risk of passing OT
  - Include an explanation for recommending go-ahead when there is a reasonable expectation that the system is not effective and/or suitable

DT&E Task Force Strongly Endorses Recent AT&L/DOT&E Initiative to Strengthen OSD OTRR Process

OSD DT&E Organization Findings

- Currently there is not an OSD organization with comprehensive DT oversight responsibility and authority
  - Historic DT organization was dismantled and residual functions were moved lower in organization in 1999, and lower yet in 2002
- Access to models, data, and analysis results is restricted by current practice in acquisition contracting, and the lack of expertise in the DT organization
- Existing residual organizations are fragmented and lack clout to provide DT guidance
- The Test Resource Management Center (TRMC) has minimal input to program-specific questions or interaction with oversight organization on specific programs
  - Organizational separation is an impediment

OSD DT&E Organization Recommendations

- The most important change required for improved OSD DT oversight is to is to reestablish a recognizable, focused, integrated, and robust DT organization within AT&L

- Consolidate DT-related functions in AT&L *
  - Program oversight and policy, and Foreign Comparative Test
  - Have Director, DT&E directly report to DUSD(A&T)
  - Restore TEMP approval authority to Director, DT&E

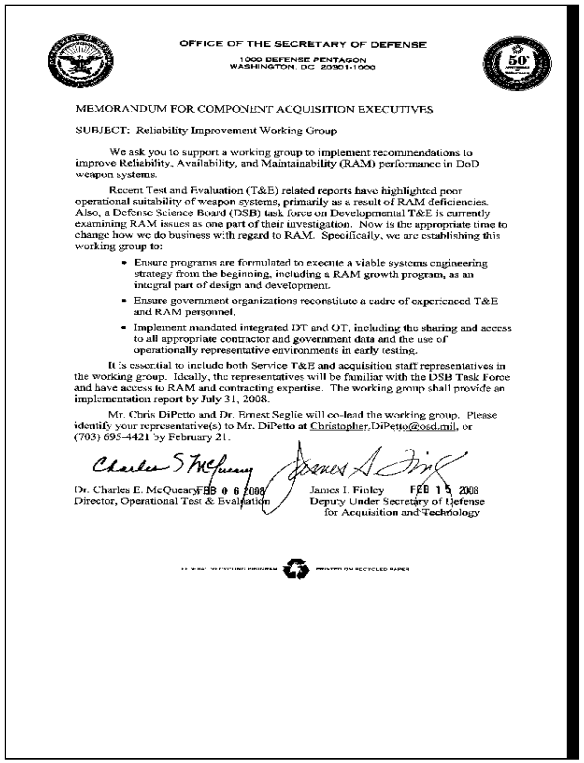
- Integrate Test Resource Management Center (TRMC) activities early into DT program planning

*Three Task Force members out of fourteen voted against consolidation

Reliability Improvement Working Group

- DUSD(A&T) and DOT&E memo signed February 15, 2008 requests CAE support to establish a working group to implement recommendations to improve RAM on DoD weapon systems during system development

- Specific Tasks:
  - Ensure execution of a viable SE strategy , including RAM growth program, as an integral part of design and development
  - Ensure government orgs reconstitute cadre of experienced T&E and RAM personnel
  - Implement mandated Integrated DT and OT, ensure access to all appropriate data (contractor and government) and conduct T&E in an operationally representative environment as early as possible



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MEMORANDUM FOR COMPONENT ACQUISITION EXECUTIVES

SUBJECT: Reliability Improvement Working Group

We ask you to support a working group to implement recommendations to improve Reliability, Availability, and Maintainability (RAM) performance in DoD weapon systems.

Recent Test and Evaluation (T&E) related reports have highlighted poor operational suitability of weapon systems, primarily as a result of RAM deficiencies. Also, a Defense Science Board (DSB) task force on Developmental T&E is currently examining RAM issues as one part of their investigation. Now is the appropriate time to change how we do business with regard to RAM. Specifically, we are establishing this working group to:

- Ensure programs are formulated to execute a viable systems engineering strategy from the beginning, including a RAM growth program, as an integral part of design and development.
- Ensure government organizations reconstitute a cadre of experienced T&E and RAM personnel.
- Implement mandated integrated DT and OT, including the sharing and access to all appropriate contractor and government data and the use of operationally representative environments in early testing.

It is essential to include both Service T&E and acquisition staff representatives in the working group. Ideally, the representatives will be familiar with the DSB Task Force and have access to RAM and contracting expertise. The working group shall provide an implementation report by July 31, 2008.

Mr. Chris DiPetto and Dr. Ernest Seglie will co-lead the working group. Please identify your representative(s) to Mr. DiPetto at Christopher.DiPetto@osd.mil, or (703) 695-4421 by February 21.

Dr. Charles E. McQueary FEB 06 2008
Director, Operational Test & Evaluation

James I. Finley FEB 15 2008
Deputy Under Secretary of Defense
for Acquisition and Technology

QUESTIONS?

The entire DSB report is available at:

http://www.acq.osd.mil/dsb/reports/2008-05-DTE.pdf

Back-Up

DOD IOT&E Results FY 2001-2003

Program	Service	ACAT	IOT&E Result		Reason
FY 2001					
F-15 TEWS	USAF	II	Effective	Not Suitable	Reliability, Maintainability, Availability
V-22 Osprey	Navy	1D	Effective	Not Suitable	Reliability, Availability, Maintainability (RAM), Human Factors, BIT
Joint Direct Attack Munitions (JDAM)	USAF	1C	Effective only with legacy fuses	Not Suitable	Integration with delivery platforms
M2A3 Bradley Fighting Vehicle	Army	1D	Effective	Suitable	
FY 2002					
Joint Primary Aircraft Training System (JPATS)	USAF	1C	Effective with deficiencies	Not Suitable	RAM, Safety, Human Factors
Cooperative Engagement Capability (CEC)	Navy	1D	Effective	Suitable	
Multiple Rocket Launcher System (MLRS)	Army	1C	Effective	Suitable	
MH-60S	Navy	1C	Effective	Not Suitable	RAM, excessive administrative and logistic repair time impacted RAM
FY 2003					
B-1B Block E Mission Upgrade Program	USAF	1D	Effective	Not Suitable	16% decrease in weapons release rate, reduction in accuracy of Mark 82 low drag weapons, 14% hit rate on moving targets
Sea wolf Nuclear Attack Submarine	Navy	1D	Effective	Suitable	Several requirement thresholds were not met but overall system effective and

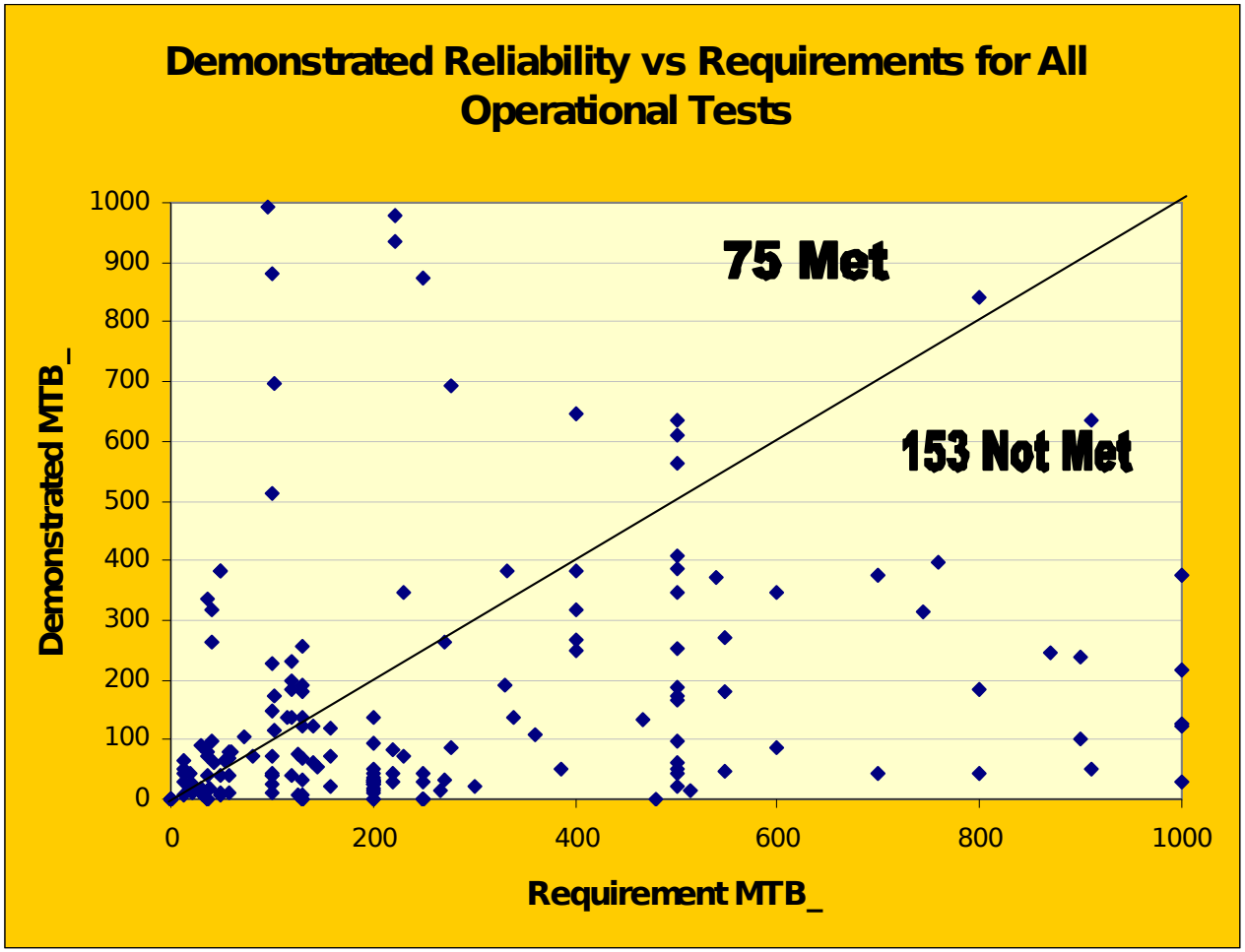
DOD IOT&E Results FY 2004 - 2005

Program	Service	ACAT	IOT&E Result		Reason
FY 2004					
Evolved Sea sparrow Missile	Navy	II	Effectiveness unresolved	Suitable	Testing was not adequate to determine effectiveness.
Stryker	Army	1D	Effective	Suitable	
Advanced SEAL Delivery System (ASDS)	Navy	1D	Effective with restrictions	Not suitable	Effective for short duration missions; not effective for all missions and profiles. Not suitable due to RAM.
Tactical Tomahawk	Navy	1C	Effective	Suitable	
Stryker Mortar Carrier-B (MC-B)	Army	1D	Effective	Not Suitable	RAM and safety concerns.
FY 2005					
CH-47F Block I	Army	1C	Effective	Not Suitable	RAM; communications system less suitable than CH-47D; did not meet Information Exchange Requirements for Block I.
F/A-22	USAF	1D	Effective	Not Suitable	RAM; needed more maintenance resources and spare parts; BIT
Joint Stand-Off Weapon-C	Navy	1C	Not Effective		Not effective against moderately hardened targets; mission planning time was excessive.
Guided-MLRS	Army	1C	Effective	Suitable	
High Mobility Attack Rocket System (HMARS)	Army	1C	Effective	Suitable	
V-22 Osprey	Navy	1D	Effective	Suitable	
EA-6B (ICAP III)	Navy	II	Effective	Suitable	

DOD IOT&E Results FY 2006

Program	Service	ACAT	IOT&E Result		Reason
CY 2006					
Common Missile Warning System (CMWS)	Army	1C	Effective	Suitable	Effective and suitable in the OIF/OEF environment but needs further testing outside of the OIF/OEF environment.
Deployable Joint Command and Control (DJC2)	Navy	1AM	Effective	Not Suitable	Operational Test Agency, COTF, reported effective, not suitable. BLRIP not complete.
Integrated Defensive Electronic Countermeasures	Navy	II			Test suspended due to reliability problems.
Surface Electronic Warfare Improvement Program (SEWIP) Block 1A	Navy	II	Not Effective	Not Suitable	Block 1A Upgrade does not make the AN/SLQ-32 EWS operationally effective and suitable but does enhance ability to protect ships
C-130J	USAF	1C	Effective single ship; Not effective in formation	Suitable with shortfalls	Effective single ship; not effective in formation air land / air drop; not effective in non-permissive threat environment. Shortfalls in suitability due to maintainability issues
Small Diameter Bomb (SDB) Increment 1	USAF	1D	Effective with limitations	Suitable with limitations	Limited effectiveness and suitability due to bomb rack reliability and deficiencies in software used to predict optimum fuzing solutions. Oct 2006 flight operations suspended

Systems Failing Reliability During Operational Testing (OT)



Program Structure

Findings

- Operational suitability shortcomings are affected by common occurrences of programs being started without adequate funding and schedule reserves to address known and unknown technical issues. Funding is unstable, and timelines are success-oriented and schedule-driven vice event-driven
  - In some cases, funding types (RDT&E, Procurement, Operations and Management (O&M)) are not phased properly
  - Schedules are not based on an analysis of the technical efforts that are required for the program to be successful

Recommendations

- DoD policy should require the program's system engineering strategy be accommodated when establishing funding and schedule requirements for SDD
- Require that the technical strategy be documented and approved prior to release of an RFP to ensure the contractual requirements accurately reflect the needed technical effort

Requirements Definition

Findings

- Operational requirements are not consistently stated in terms that are testable, quantifiable, measurable, and reasonable
  - If operational requirements are not properly defined at the onset of a program, the design baseline may not reflect the user's intended requirement
  - The program office sometimes misinterprets the operational requirements and carries that misinterpretation into the design specifications

Recommendations

- Establish procedures to help ensure that operational requirements are testable or evaluable, quantifiable, measurable, and reasonable throughout the JCIDS process
  - Involve DT&E and OT&E early in the requirements definition process
  - Make user representatives available to the program office to help resolve any poorly defined requirements

Contractual Performance Requirements

Findings

- Program offices sometime lack the ability to effectively translate operational requirements into contractual requirements, by not taking into account the differences in testing and deployment environments, failure definitions, etc.
  - Any errors in this translation impact the design and development efforts and generally become evident in OT, especially in the case of RAM requirements
  - Application of an effective systems engineering process can minimize the likelihood of disconnects in operational and contractual requirements

Recommendations

- Systems engineering tools and techniques (e.g., internal government system requirements review) should be applied by Service acquisition and engineering organizations prior to contract execution to ensure operational requirements are accurately reflected in design-related contractual requirements. The training and tools must be readily available to all parties.

Alignment of DoD Terminology with Systems Engineering Process

Findings

- Inconsistent terminology used to define the level of performance required
  - Contributes to differences between technical requirements definition and operational performance
- Systems engineering process provides structured methodology to decompose operational requirements into technical specifications
- Decomposition of operational requirements into operational test related evaluation metrics is not well structured
  - Usually based on some level of military judgment

Recommendations

- Align the systems engineering and the test and evaluation processes through a common terminology definition and ensure the common terminology is reflected in DoD and Service level policy and guidance
- During the Systems Requirements Review, ensure through the participation of the engineering and test communities that operational requirements are accurately reflected in design-related contractual requirements
  - Should be consistent with planned operational test criteria for assessing operational effectiveness and suitability

Commercial Off-the-Shelf (COTS)

Findings

- COTS components are used in all defense systems today at a variety of system and subsystem levels
  - COTS components have been selected to reduce cost in systems, often without proper planning to accommodate challenges relating to reliable mission performance
- COTS capabilities may not be properly matched with the full spectrum of system mission requirements and the related operating environments.
  - COTS, regardless of Work Breakdown Structure (WBS) level, must either meet system requirements (e.g., g forces) or the system must be designed in such a way as to protect COTS from the more demanding military environment
- Integrating COTS as a subsystem frequently requires no less design integration and test substantiation than a newly designed subsystem
- Programs have been delayed or terminated because of a disconnect between requirements and actual capabilities of COTS subsystems or systems for military applications

Recommendations

- Require that all components (COTS or otherwise) be analyzed and selected based on the full spectrum of operational needs and expected environments
  - Entire system must meet all key mission performance requirements, including RAM, in an operational military environment
  - Structure COTS-related program acquisition strategies based on a low-risk approach to ensure adequate resources
  - Conduct gap analysis to address resource requirements for COTS program execution (e.g., modification, integration, qualification, testing in an operational environment)
- Ensure quick-reaction COTS shortcuts do not allow unqualified or unproven devices with lesser capabilities to be incorporated without a detailed risk assessment

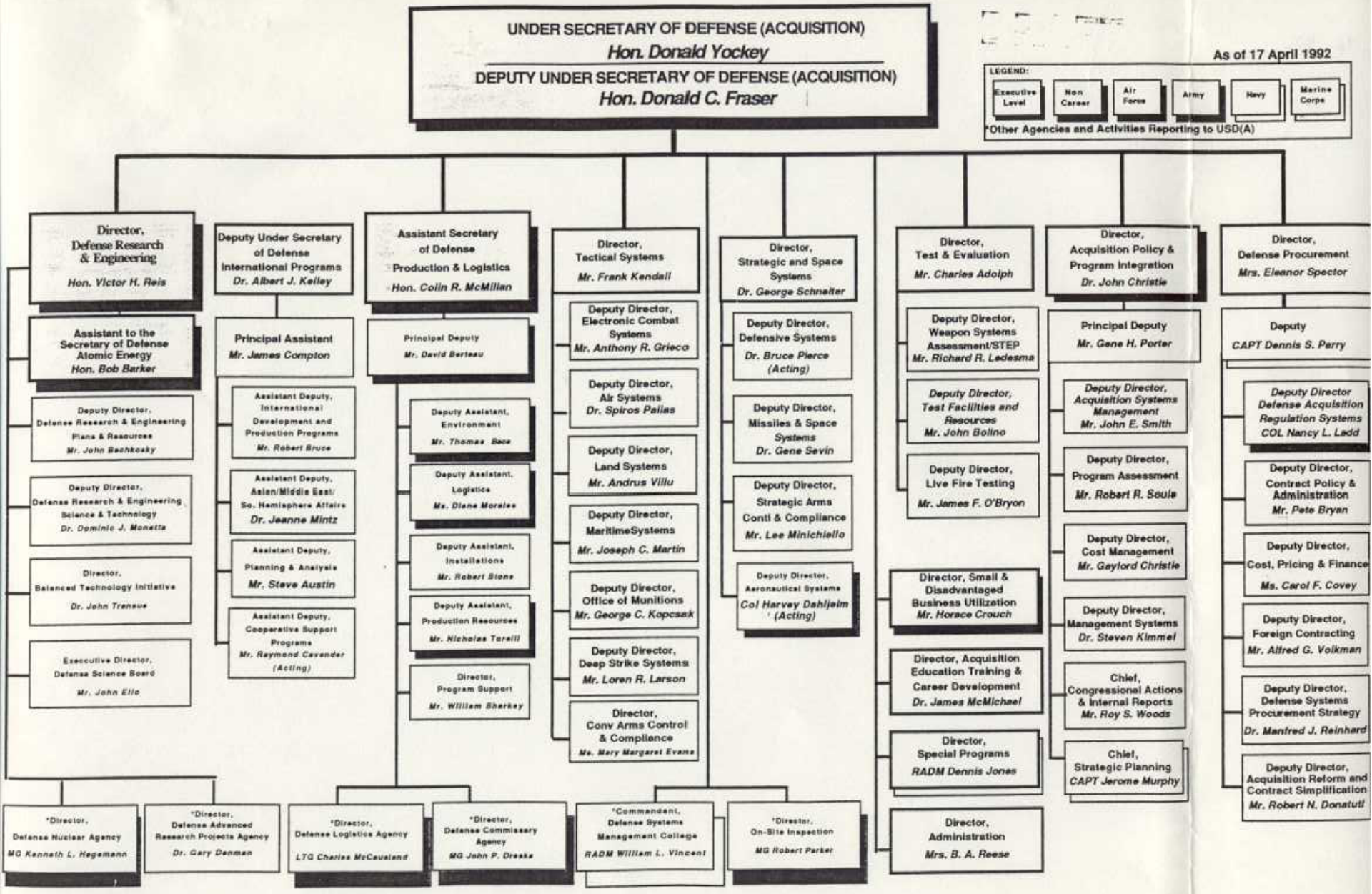
Systems of Systems (SoS)

Findings

- The fact that no single manager owns overall performance and verification across multiple constituent systems is an impediment to achieving required operational suitability and effectiveness in SoS.
- Acquisition process generally is tailored to the development of individual systems, not SoS.
- Some mission critical testing of SoS capabilities areas often accomplished for the first time in OT or when deployed
- Testing all the SoS requirements of all the systems is impossible
- SoS requires better approaches to requirements definition, resources, and acquisition processes, including judicious T&E.

Recommendations

- The Portfolio Capability manager should be assigned to structure developmental programmatic responsibilities and to authoritatively and expeditiously adjudicate jurisdictional questions as issues arise.
- Initiate a study of current SoS programs to document lessons learned and best practices.
- Formulate alternative strategies to adapt current requirement, acquisition, and funding processes to enable timely, efficient, and effective T&E of SoS capabilities.


UNDER SECRETARY OF DEFENSE (ACQUISITION)
Hon. Donald Yockey
DEPUTY UNDER SECRETARY OF DEFENSE (ACQUISITION)
Hon. Donald C. Fraser
As of 17 April 1992
LEGEND:
Executive Level
Non Career
Air Force
Army
Navy
Marine Corps
*Other Agencies and Activities Reporting to USD(A)
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Assistant to the Secretary of Defense Atomic Energy
Hon. Bob Barker
Deputy Director, Defense Research & Engineering Plans & Resources
Mr. John Bachkosky
Deputy Director, Defense Research & Engineering Science & Technology
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Director, Balanced Technology Initiative
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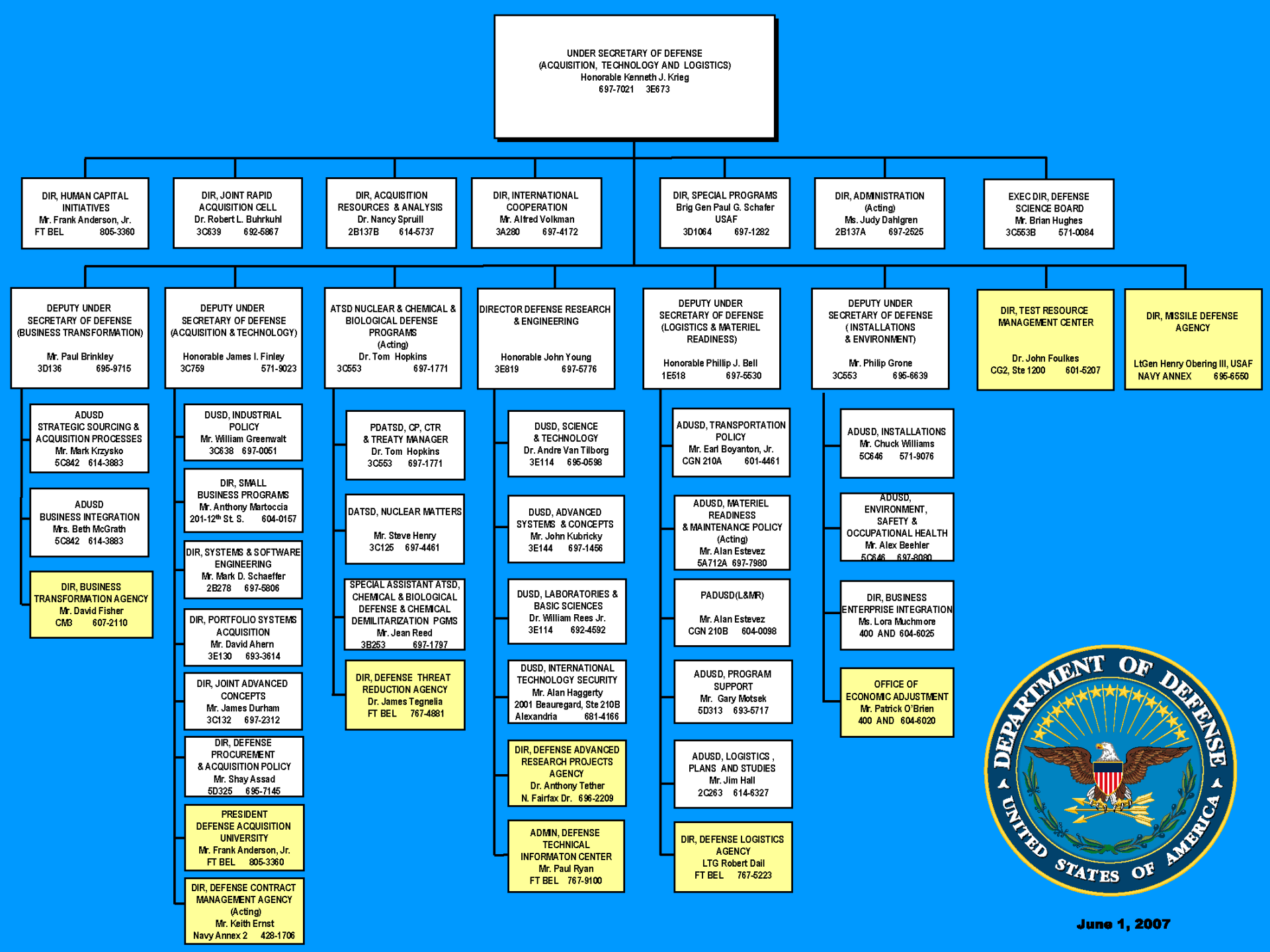
*Director, On-Site Inspection
MG Robert Parker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Mrs. Beth McGrath
5C842 614-3883
DIR, BUSINESS TRANSFORMATION AGENCY
Mr. David Fisher
CM3 607-2110
DEPUTY UNDER SECRETARY OF DEFENSE (ACQUISITION & TECHNOLOGY)
Honorable James I. Finley
3C759 571-9023
DUSD, INDUSTRIAL POLICY
Mr. William Greenwalt
3C638 697-0051
DIR, SMALL BUSINESS PROGRAMS
Mr. Anthony Martoccia
201-12th St. S. 604-0157
DIR, SYSTEMS & SOFTWARE ENGINEERING
Mr. Mark D. Schaeffer
2B278 697-5806
DIR, PORTFOLIO SYSTEMS ACQUISITION
Mr. David Ahern
3E130 693-3614
DIR, JOINT ADVANCED CONCEPTS
Mr. James Durham
3C132 697-2312
DIR, DEFENSE PROCUREMENT & ACQUISITION POLICY
Mr. Shay Assad
5D325 695-7145
PRESIDENT DEFENSE ACQUISITION UNIVERSITY
Mr. Frank Anderson, Jr.
FT BEL 805-3360
DIR, DEFENSE CONTRACT MANAGEMENT AGENCY (Acting)
Mr. Keith Ernst
Navy Annex 2 428-1706
ATSD NUCLEAR & CHEMICAL & BIOLOGICAL DEFENSE PROGRAMS (Acting)
Dr. Tom Hopkins
3C553 697-1771
PDATSD, CP, CTR & TREATY MANAGER
Dr. Tom Hopkins
3C553 697-1771
DATSD, NUCLEAR MATTERS
Mr. Steve Henry
3C125 697-4461
SPECIAL ASSISTANT ATSD, CHEMICAL & BIOLOGICAL DEFENSE & CHEMICAL DEMILITARIZATION PGMS
Mr. Jean Reed
3B253 697-1797
DIR, DEFENSE THREAT REDUCTION AGENCY
Dr. James Tegnelia
FT BEL 767-4881
DIRECTOR DEFENSE RESEARCH & ENGINEERING
Honorable John Young
3E819 697-5776
DUSD, SCIENCE & TECHNOLOGY
Dr. Andre Van Tilborg
3E114 695-0598
DUSD, ADVANCED SYSTEMS & CONCEPTS
Mr. John Kubricky
3E144 697-1456
DUSD, LABORATORIES & BASIC SCIENCES
Dr. William Rees Jr.
3E114 692-4592
DUSD, INTERNATIONAL TECHNOLOGY SECURITY
Mr. Alan Haggerty
2001 Beauregard, Ste 210B Alexandria 681-4166
DIR, DEFENSE ADVANCED RESEARCH PROJECTS AGENCY
Dr. Anthony Tether
N. Fairfax Dr. 696-2209
ADMIN, DEFENSE TECHNICAL INFORMATON CENTER
Mr. Paul Ryan
FT BEL 767-9100
DEPUTY UNDER SECRETARY OF DEFENSE (LOGISTICS & MATERIEL READINESS)
Honorable Phillip J. Bell
1E518 697-5530
ADUSD, TRANSPORTATION POLICY
Mr. Earl Boyanton, Jr.
CGN 210A 601-4461
ADUSD, MATERIEL READINESS & MAINTENANCE POLICY (Acting)
Mr. Alan Estevez
5A712A 697-7980
PADUSD(L&MR)
Mr. Alan Estevez
CGN 210B 604-0098
ADUSD, PROGRAM SUPPORT
Mr. Gary Motsek
5D313 693-5717
ADUSD, LOGISTICS , PLANS AND STUDIES
Mr. Jim Hall
2C263 614-6327
DIR, DEFENSE LOGISTICS AGENCY
LTG Robert Dail
FT BEL 767-5223
DEPUTY UNDER SECRETARY OF DEFENSE (INSTALLATIONS & ENVIRONMENT)
Mr. Philip Grone
3C553 695-6639
ADUSD, INSTALLATIONS
Mr. Chuck Williams
5C646 571-9076
ADUSD, ENVIRONMENT, SAFETY & OCCUPATIONAL HEALTH
Mr. Alex Beehler
5C646 697-8080
DIR, BUSINESS ENTERPRISE INTEGRATION
Ms. Lora Muchmore
400 AND 604-6025
OFFICE OF ECONOMIC ADJUSTMENT
Mr. Patrick O'Brien
400 AND 604-6020
DIR, TEST RESOURCE MANAGEMENT CENTER
Dr. John Foulkes
CG2, Ste 1200 601-5207
DIR, MISSILE DEFENSE AGENCY
LtGen Henry Obering III, USAF
NAVY ANNEX 695-6550
DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA
June 1, 2007

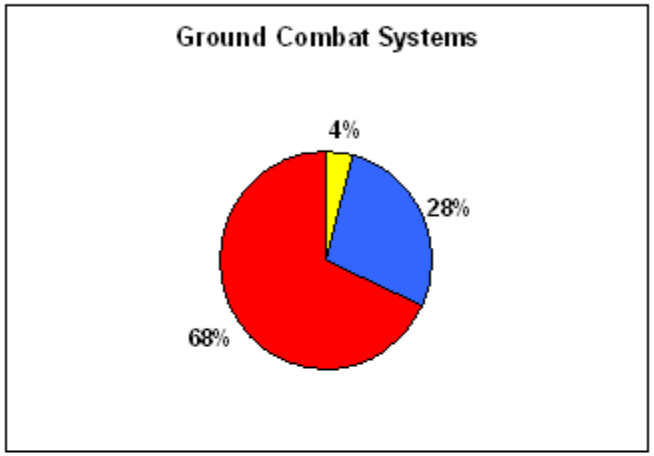
Retirement Eligible MRTFB Civilians

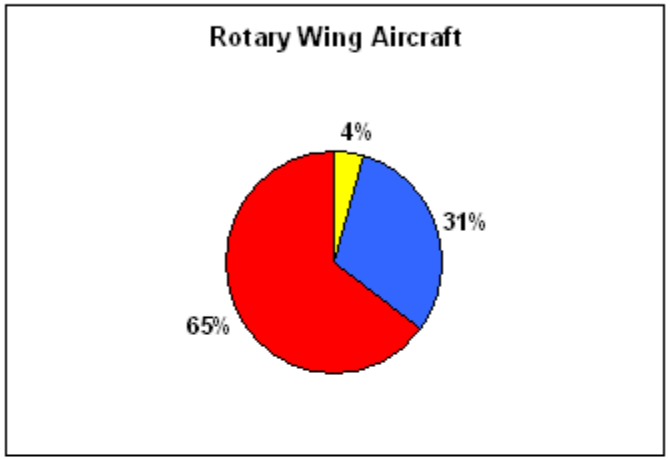
RETIREMENT PROFILE FY 2005 – FY 2010

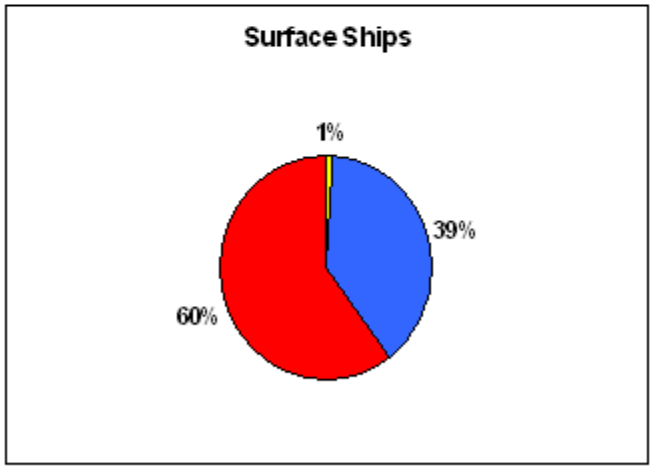
Total Civilians (FY05)		FERS Retirement Eligible					
		FY05		FY 06-10		6-Year Total	
Category	No.	FERS	% in grade	FERS	% in grade	FERS	% in grade
GS-7/GS-12	3897	103	23.9%	441	35.3%	544	32.4%
GS-13/GS-15	4117	61	15.0%	319	28.7%	380	25.0%
GS-6 & Under	703	12	30.0%	57	42.2%	69	39.4%
SES	50	0	0.0%	2	10.0%	2	6.7%
Total	8767	176	19.8%	819	32.6%	995	29.2%

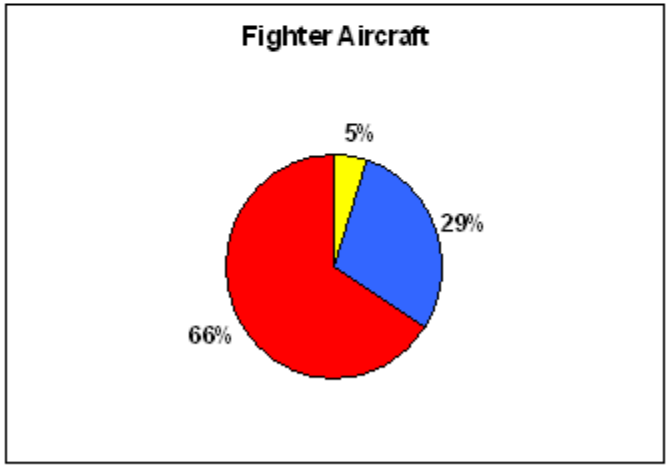
Total Civilians (FY05)		CSRS Retirement Eligible					
		FY05		FY 06-10		6-Year Total	
Category	No.	CSRS	% in grade	CSRS	% in grade	CSRS	% in grade
GS-7/GS-12	3897	328	76.1%	808	64.7%	1136	67.6%
GS-13/GS-15	4117	345	85.0%	793	71.3%	1138	75.0%
GS-6 & Under	703	28	70.0%	78	57.8%	106	60.6%
SES	50	10	100.0%	18	90.0%	28	93.3%
Total	8767	711	80.2%	1697	67.4%	2408	70.8%

O&S Costs Represent Largest Fraction of Life Cycle Costs, by Far









OSD CAIG

RDT&E Procurement O&S